

Timberland Conversion in California from 1969 to 1998

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Abstract

Between 1969 and 1998, approximately 113,000 acres were converted from private timberland to other uses. Conversions on lands categorized “timberland” under the Forest Practice Act include lands with or without Timberland Production Zone (TPZ) classification. Land was converted to a variety of uses, including grazing, development, and vineyards. Prior to 1980, the main purpose of conversion was grazing. Since then, conversion to subdivisions has been the main purpose. The impact of conversions on timber supply is not significant, but in many local areas, conversions are a major land use issue.

Over the last 30 years, California has experienced urban expansion. In addition, changes in the relative profitability of different commodities (such as timber, cattle, and grapes) have led to shifts in land use. Following transportation networks and new developments, people have moved into forested areas of the state that historically have managed primarily to produce timber.

This document describes the extent of timberland conversion over the past three decades using the timberland conversion permit and exemption records from California Department of Forestry and Fire Protection (CDF). These records are the longest ongoing source of information about changes in California’s private timberland use over time.

Methodology

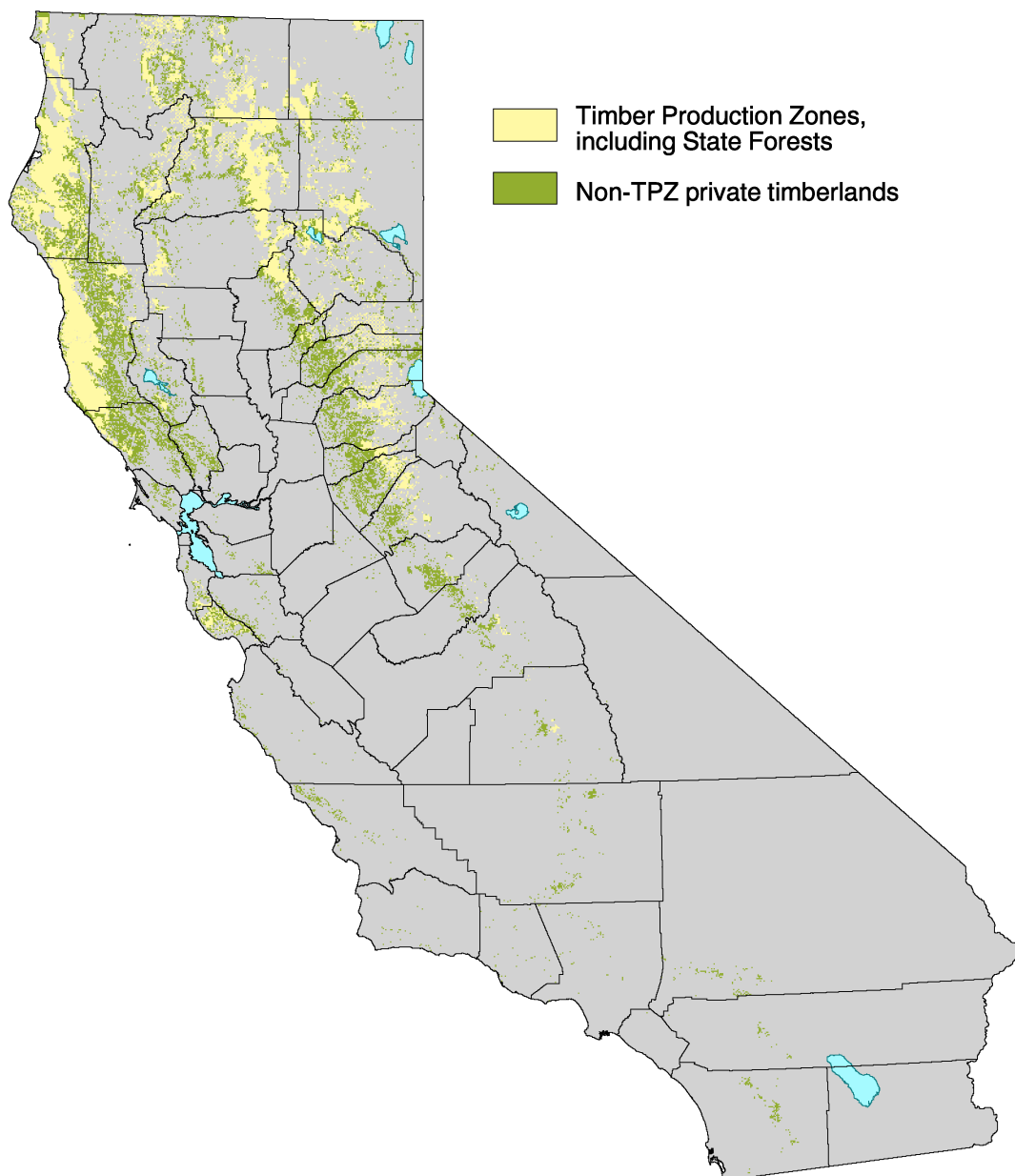
Under Section 4621 of the Public Resources Code (PRC), any person who wishes to convert timberland to uses other than growing timber must obtain a conversion permit from CDF. The State Board of Forestry and Fire Protection has passed rules that govern the conditions and procedures under which permits can be granted.

“Timberland” is defined by PRC Section 4526. It includes land, other than federal land, which “is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber

and other forest products including Christmas trees.” The Board of Forestry has defined commercial species to include conifers but not hardwoods.

Based on 1994 U.S. Forest Service Forest Inventory and Analysis estimate (Waddell et al, 1997), there are approximately 7.4 million acres of timberland in private ownership, not including federal, state or local ownerships (Figure1). About 5.5 million acres of the private timberland is zoned for timber production (Timberland Production Zone or TPZ) under the Forest Taxation Reform Act of 1976. The remaining 2.9 million acres are not zoned as TPZ but are treated as Timberland for purposes of forest practice regulation requiring conversion permits. Below is the approximate location of private timberlands and TPZ lands.

Figure 1. Private timberland and Timber Production Zone lands



Source: compiled and edited by FRAP from Pacific Forest Trust, 2002

TPZ is a zoning classification applied to private timberland and State forests by local government under the Forest Taxation Reform Act of 1976. In addition to the definition of “timberland” applied in the Forest Practice Act, land within a TPZ is also subject to the definition in Section 51104 (f) of the Government Code (GC). In the GC timberland means privately owned land or land acquired for state forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre.

Land zoned TPZ is restricted for use in timber growing or compatible uses, such as outdoor recreation or grazing. This restriction on use lasts ten years and is renewed each year; in return, landowners receive reduced property tax assessments on the land.

“Conversion” from timber growing to other land uses may occur either on land that is zoned for timber production or land that is still timberland but which is not zoned for timber production. Within TPZ lands, timberland conversion means the immediate rezoning of TPZ, whether timber operations are involved or not. Some exemptions may apply. Within non-TPZ timberlands, under Section 1100 (g) of the California Code of Regulations (CCR), timberland conversion means transforming timberland to a non-timber growing use through timber operations where:

1. Future timber harvests will be prevented or infeasible because of land occupancy and activities thereon; or
2. Stocking requirements of the applicable district forest practice rules will not be met within five years after completion of timber operations; or
3. There is a clear intent to divide timberland into ownerships of less than three acres. In these cases, a timberland conversion permit is required.

A timberland conversion exemption is applicable to the following situations of converting timberland for (Section 1104, CCR):

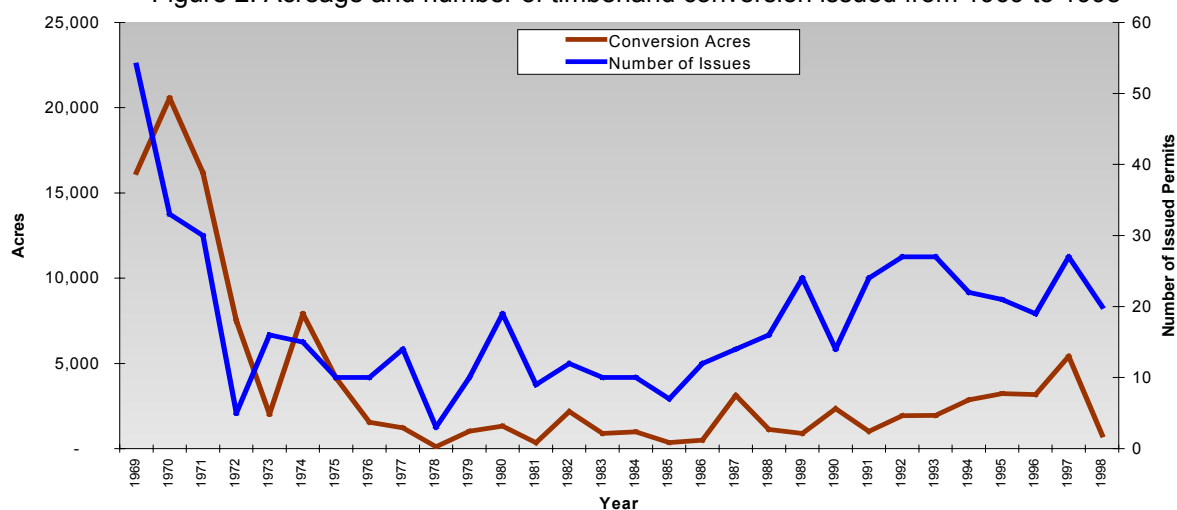
1. Non-timber use only, of less than three acres in one contiguous ownership, whether or not it is a portion of a larger land parcel and shall not be part of a THP;
2. Construction or maintenance of right-of-way by a public agency on its own or any other public property;
3. Construction and maintenance of gas, water, sewer, oil, electric, and communication right-of-way by private or public utility; and
4. Subdivision development outside of TPZ.

Timberland conversion records maintained currently at CDF have some information on acres and purpose of conversion but typically do not provide detailed information on converted locations, land uses, and ownership. Where common categories were lacking, larger inclusive categories were used to summarize data.

Total acreage and number of permits

From 1969 to 1998, California's 112,866 acres of timberland were converted to other land uses. This is an average of 3,762 acres per year. Since 20,568 acres were converted in 1970, only the years 1974 and 1997 experienced timberland conversion acreage greater than 5,000 acres. Timberland conversion averaged 7,739 acres per year during the first decade, dropped to 1,186 acres per year during the second decade, and increased 2,256 acres per year during the last decade. In total, 534 timberland conversion permits were issued between 1969 and 1998 for an average of 18 permits per year.

Figure 2. Acreage and number of timberland conversion issued from 1969 to 1998



Regional differences in conversions

California can be separated into three regions to show the location patterns of timberland conversions over time (CDF, 1993). The Coast region covers the Northern and central coast counties of Alameda, Colusa, Contra Costa, Del Norte, Humboldt, Lake, Marin, Mendocino, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, Yolo, and western Trinity County. The Northern region covers the north interior counties of Butte, Glenn, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, Sierra, Siskiyou, Sutter, Tehama, Yuba, and eastern Trinity County. However, because of data availability, this analysis considers timberland conversions after 1992 in Trinity County as in the Northern region. The Southern region covers the remaining counties in California (Figure 3).

Figure 3. Three regions in California



Over the past 30 years (1969-1998), 45,345 acres (40 percent) of timberlands converted were in the Coast region, 55,021 acres (49 percent) in the Northern region, and 12,499 acres (11 percent) in the Southern region.

Regional distribution is shown in Table 1. In terms of the number of timberland conversions, 33 percent, 43 percent, and 24 percent were in the Coast, Northern, and Southern region, respectively.

Table 1. Timberland conversion permits and acreage issued in California from 1969 to 1998

Region	Coast		Northern		Southern	
Year	Permit	Total annual acreage	Permit	Total annual acreage	Permit	Acreage
1969	31	9,065	18	6,865	5	267
1970	16	18,545	12	1,207	5	816
1971	16	8,488	11	7,379	3	312
1972	2	172	3	7,320	-	-
1973	4	905	12	1,113	-	-
1974	2	875	9	6,853	4	178
1975	2	3,043	5	1,074	3	36
1976	5	1,050	4	376	1	114
1977	4	60	2	23	8	1,135
1978	2	108	-	-	1	12
1979	4	284	5	719	1	20
1980	4	110	7	635	8	580
1981	3	48	6	297	-	-
1982	2	38	9	2,120	1	15
1983	1	45	2	700	7	145
1984	2	100	3	72	5	820
1985	2	31	2	46	3	278
1986	1	-	9	481	2	16
1987	6	493	3	967	5	1,669
1988	2	38	11	698	3	396
1989	7	131	9	300	8	468
1990	4	182	5	1,845	5	317
1991	13	523	8	276	3	217
1992	4	162	13	652	10	1,115
1993	5	102	9	644	13	1,210
1994	3	60	13	2,158	8	640
1995	3	129	11	1,895	6	1,208
1996	7	91	9	2,951	3	123
1997	11	273	13	4,936	4	207
1998	7	194	9	419	4	185
TOTAL	175	45,345	232	55,021	129	12,499

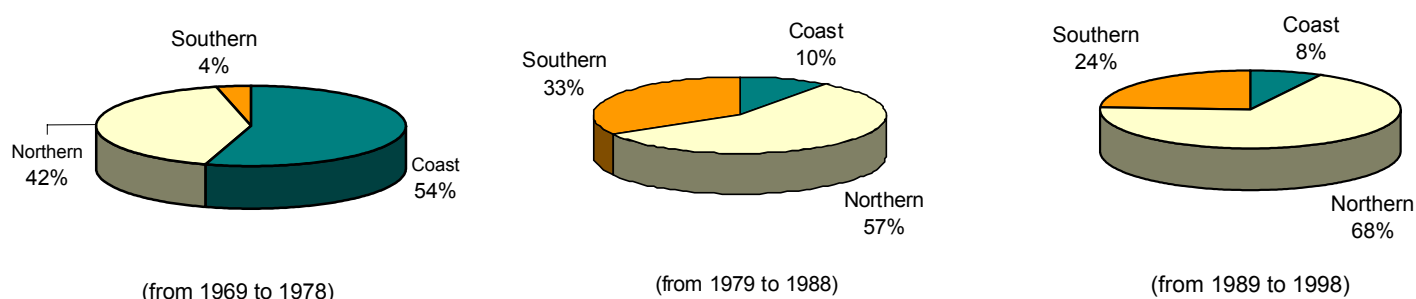
On average, this is 259 acres, 237 acres, and 97 acres per timberland conversion in these three regions, respectively. Noticeably, during the last two decades, the average acreage of timberland conversion permits issued stayed around 50 acres each year in the Coast region. However, there was a dramatic variation of over 300 acres during the same period in the other two regions, especially the Northern region.

The percent of total conversion acreage varied by decade between regions (Figure 4). During the first decade, 54 percent of timberland conversion acreage was located in the Coast region and 96 percent of this was for grazing. While timberland conversions for grazing declined in this region, the acreage percentage also dropped dramatically from 54 percent to ten percent during the next ten years and down to eight percent during the last decade.

The percentages of statewide timberland conversion acreage in the Northern region, shows an increasing trend through the last three decades from 42 to 68 percent with steady timberland conversions for subdivision development and increasing timberland conversions for recreation.

Conversions for subdivision development of timberland conversion acreage shifted from four percent during the first decade to 24 percent in the last decade. It also increased the relative rate of the Southern region from 4 percent in the first decade to 24 percent in the last decade.

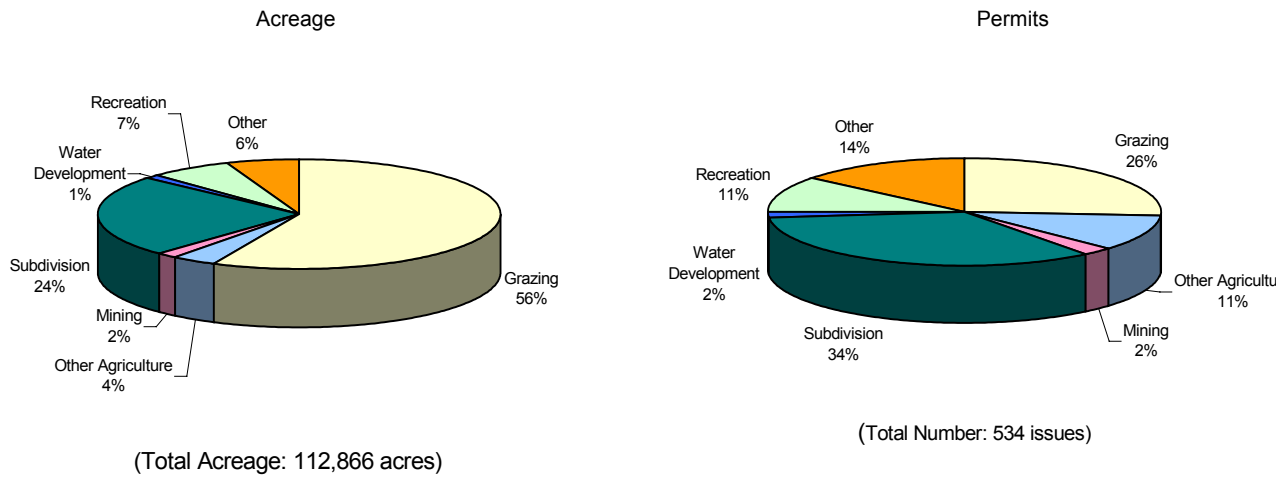
Figure 4. Acreage of timberland conversions by region from 1969 to 1998



Purpose of conversions

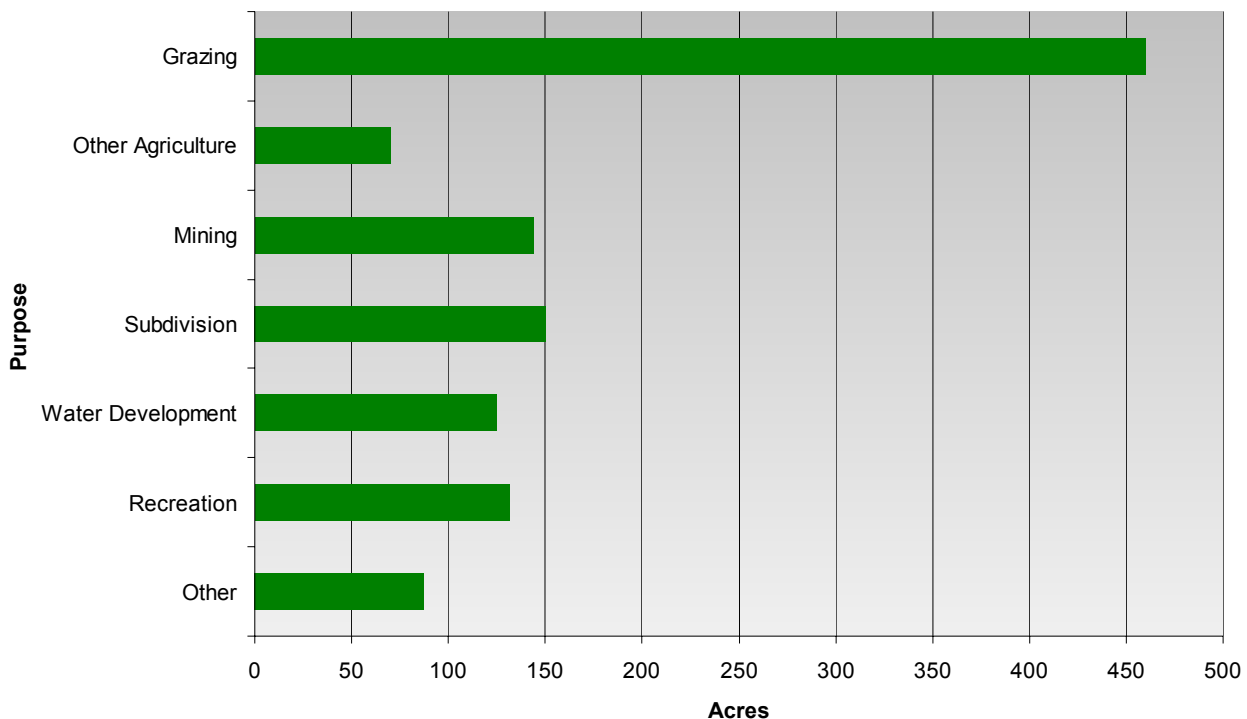
In total, over the last three decades, 56 percent of all acres of timberland conversion were for grazing, 24 percent for subdivision development, and the remaining 20 percent for other agriculture, mining, water development, recreation, and other land uses (Figure 5). However, based on per permit accounting, 34 percent of permits was for subdivision development and only 26 percent for grazing.

Figure 5. Percentage of statewide timberland conversions by purpose from 1969 to 1998



For the three decade period, timberland conversion for grazing averaged 460 acres per permit issued, while timberland conversion for subdivision development, mining, recreation, and water development averaged between 120 to 150 acres per issue, and timberland conversion for other agriculture and other land uses averaged less than 100 acres per issue (Figure 6). The acreage of timberland conversions for grazing declined dramatically and the acreage of timberland conversions for subdivision development increased.

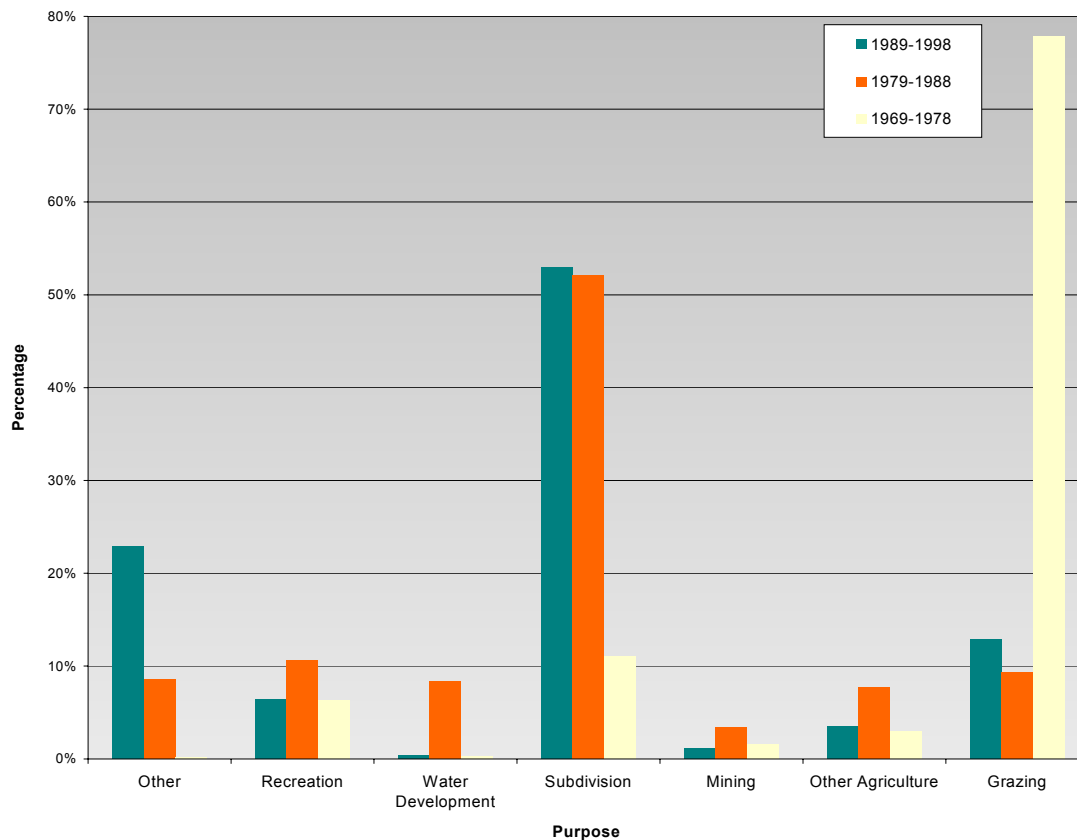
Figure 6. Average acreage of statewide timberland conversion by purpose from 1969 to 1998



However, by decade the purposes of conversion change. During the first decade (1969 to 1978), 78 percent of timberland conversion acreage was for grazing and 11 percent was for subdivision development (Figure 7). However, during the last two decades, the percentage for grazing dropped to around 10 percent, while subdivision development increased to over 50 percent. The percentage of timberland conversion acreage for water development was largest during the second decade. The percentages for other agriculture, mining, and recreation in the same decade were also higher than in other decades. During the last decade, the timberland conversion for other land uses had a sudden jump to 23 percent. This was triggered by a 4,580-acre timberland conversion issued in 1998 to rezone timberland production zone (TPZ) to general forestland in Sierra County.

More than half of timberland conversion acreage was used for subdivision development during the last two decades.

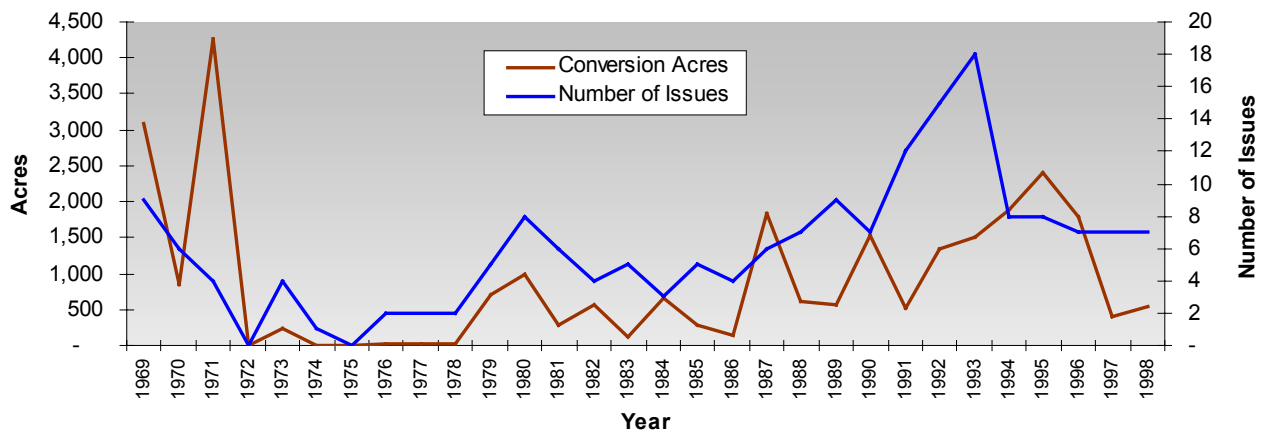
Figure 7. Percentage statewide of acreage in each decade by the purpose of timberland conversions from 1969 to 1998



Subdivisions

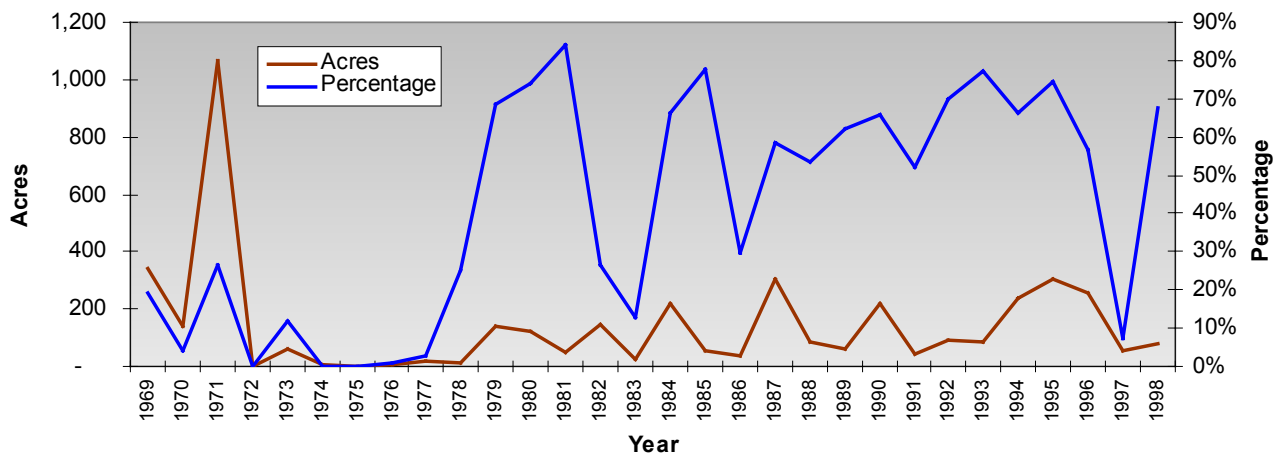
Over the past 30 years, 27,192 acres of timberlands were converted to 181 subdivision developments (150 acres per issue or 906 acres per year on average) (Figure 8). Except for the large acreage in 1969 and 1971, the acreage of timberland conversions for subdivision development in each year stayed below 2,500.

Figure 8. Acreage and number of timberland conversion permits for subdivision development between 1969 and 1998



The average acreage per timberland conversion for subdivision development stayed under 350 acres each year over the past three decades except in 1971, when four timberland conversions were issued for subdivision development on 4,257 acres of timberland (Figure 9). Timberland conversion for subdivision development has become the major component in all timberland conversions since 1979.

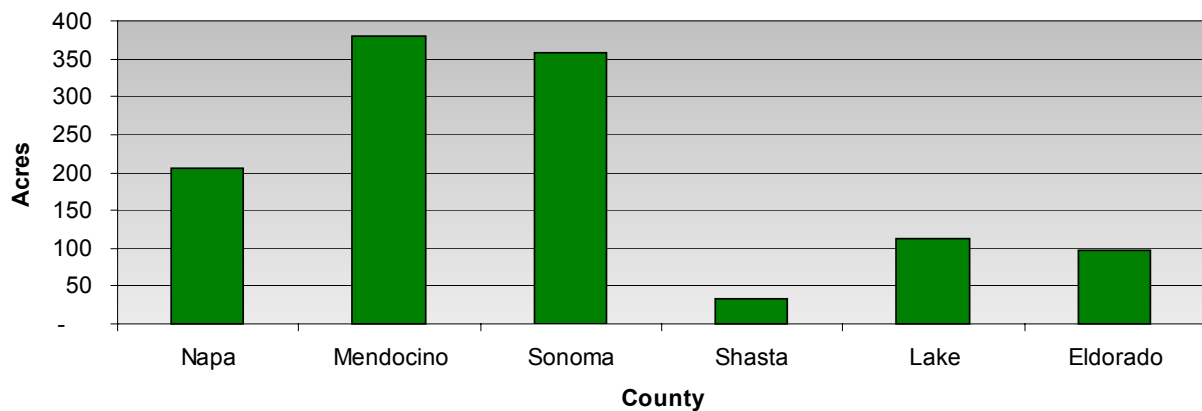
Figure 9. Average acreage per timberland conversion for subdivision development and the percentage of timberland conversion acreage for subdivision development in the total acreage of timberland conversions issued from 1969 to 1998



Vineyards

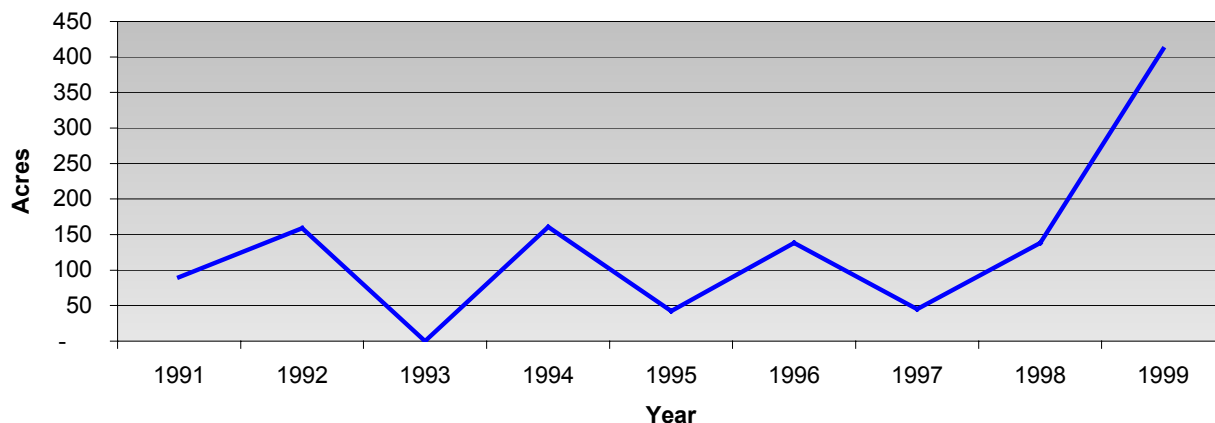
Another purpose of converting timberland is for vineyards. Timberland conversions for vineyards were embedded in the “other agriculture” land use category before 1991 and could not be separated using the timberland conversion records currently available at CDF. However, from January of 1991 to May of 1999, the percent of total timberland used for vineyards in six counties was 32 percent in Mendocino, 30 percent in Sonoma, 17 percent in Napa, and the remaining 21 percent in Lake, Eldorado, and Shasta counties (Figure 10). The total acreage of these 28 timberland conversions for vineyards issued during this period reached 1,186 acres.

Figure 10. Acreage of timberland converted to vineyards issued from January of 1991 to May of 1999 by county



The trend of timberland conversion acreage for vineyards since 1991 shows a seesaw pattern with a high level around 150 acres (1992 and 1994) and a low level below 50 acres (1993) (Figure 11). With only the first four months recorded in 1999, the acreage of timberland conversion for vineyards reached 411 acres, which almost tripled the acreage in the previous year. From 1991 to 1998, timberland conversion for vineyards averaged 97 acres per year.

Figure 11. Acreage of timberland converted to vineyards issued from 1991 to May of 1999



TPZ lands

From 1979 to 1998, 36 out of 344 total timberland conversions were conducted on TPZ lands. These covered 7,140 acres, or 20 percent of the total timberland conversion acreage during the same period. Within these TPZ rezoning acreages, 7 percent were converted for subdivision development, 8 percent for recreation, and the remaining 85 percent for other land uses. Even though 22 of these 36 timberland conversions on TPZ lands were in Northern and Central Coast, they covered only 14 percent of the total TPZ rezoning acreage. The other 81 percent of the total TPZ rezoning acreage was located northern interior with only eight timberland conversion permits. The remaining five percent of the total TPZ rezoning acreage was allocated in the Southern region by six timberland conversions. Thus, on average, it was 43 acres per issue in the Coast region, 727 acres per issue in the Northern region, and 63 acres per issue in the Southern region.

Observations

This analysis includes all timberland conversion permits and all timberland conversion exemptions for subdivision development on non-timberland production zone (non-TPZ) lands. One hundred twelve thousand eight hundred sixty six (112,866) acres of timberland were converted to other land uses from 1969 to 1998. Based on CDF's timberland conversion records and timberland acreage estimated using 1977 Calveg, this is approximately 1.2 percent of total timberland acreage in private, state, and local ownership. Timberland conversions on TPZ lands in the state covered 0.13 percent of the 1998 TPZ land acreage over the last 20 years. Since most timberland conversions are conducted on non-industrial private land, timberland converted at this rate has not significantly impacted California's timber supply, but has caused concerns when timberland conversions occurred around urban areas for subdivision and vineyard development.

With California's large population and economic growth and public policies on land use unchanged, the overall trend is expected to rise for the next decade. This is true even though the acreage and the number of timberland conversions for subdivision development have been down in recent years. In the last few years, timberland conversions for vineyards have increased.

Many vineyards and subdivision developments were not converted from timberland but from lands with other land uses, such as oak woodland, rangeland, or abandoned agricultural land. Combining all these conversions may provide a more comprehensive picture for all land conversions for vineyard or subdivision development in the state.

Data reliability

Absence of an efficient database to record timberland conversion processes limits the effectiveness and accuracy of studies on this topic. However, an approximation of acres converted may be made using Forest Inventory and Analysis (FIA) data collected by the USDA Forest Service, Pacific Northwest Research Station, for every ten years (during the period from around 1981-1984 to 1991-1994). Estimates include:

- 17,000 acres of timberland to be converted for agriculture
- 21,000 acres for urban, 70,000 acres for right-of-way, and
- 113,000 acres for reserves in California

This estimate, based on a large grid sampling scheme in California, is about 11 to 14 times greater than the estimate based on CDF's timberland conversion records, which show 20,515 acres from 1981 to 1994 or 16,115 acres from 1985 to 1994. In addition, FIA data have more strict definitions of timberland and estimate 7.9 million acres of private timberland in the state, which is 1.3 million acres less than the estimate using 1977 Calveg data. Since FIA surveys have the limitation of the large grid sampling design and one FIA plot can possibly represent from 5,000 to 8,000 acres, the timberland conversion estimates from CDF's records might be more accurate. More information on California's timberland area change, as analyzed using FIA data, is also presented by the author (Shih, 1999).

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